DOCUMENT RESUME

ED 357 062 TM 019 789

AUTHOR Peterson, Norman K.; Sellers, Darlene
TITLE Student Motivation and Learning Styles in a Multimedia Learning Environment.
PUB DATE Oct 92
NOTE 7p.; Paper presented at the Annual Meeting of the Northern Rocky Mountain Educational Research Association (Custer, South Dakota, October 9, 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; *Computer Assisted Instruction; *Cooperative Learning; Educational Environment; Formative Evaluation; Group Dynamics; Intergroup Relations; Interpersonal Relationship; Junior High Schools; *Junior High School Students; Middle Schools; *Multimedia Instruction; Preservice Teacher Education; *Student Motivation; Student Projects
IDENTIFIERS Middle School Students; University of Wyoming

ABSTRACT

To begin to implement a multimedia teaching and learning component in the teacher education curriculum of the University of Wyoming (Laramie), a pilot study was conducted in the summer of 1992 to attempt to identify teaching and learning issues related to computer-enhanced multimedia instructional platforms. Subjects were seven middle school or junior high school students attending a 3-week course to acquaint students with the application of multimedia tools to specific learning outcomes. Presentations developed by the students involved use of computer software as well as video and audio editing, image scanning, and digitalized video imaging. A formative evaluation of the project was based on student experience, motivation, and expectations with regard to the learning environment. Student learning style was ascertained at the beginning of the workshop. Three students worked alone, and four worked in pairs. The study was not of sufficient size to answer questions about the efficacy of the multimedia learning stations, but it does highlight difficulties in cooperative learning caused when students have different learning styles. Student learning styles should be a consideration in the formation of cooperative teams. (SLD)

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STUDENT MOTIVATION AND LEARNING STYLES IN A MULTIMEDIA LEARNING ENVIRONMENT

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Northern Rocky Mountain Educational Research Association
Custer State Park, South Dakota

Presented by:

Dr. Norman K. Peterson, Asst. Prof
Darlene Sellers, Doctoral Student
University of Wyoming
October 9, 1992

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Introduction

The average university in this country, in terms of its use of information technology in teaching, is substantially behind typical elementary and secondary schools. (Newman, 1990) That is not to say that the public schools are inundated with computer technology. The Congressional Office of Technology (OTA) (1988) reports that while public schools have acquired computers rapidly, the technology is vastly underutilized. This is in contrast to the business world where technology has effectively transformed communication and information processing. The OTA report further noted that "...despite the presence of computers in almost all American public schools, only half of the Nation's teachers report having ever used computers." (p. 14) Harvey, Kell, and Drexler (1990) help to put the issue into perspective, citing from the 1989 study conducted by LaFrenz and Friedman:

> there is little doubt that the vision of the computer's power to transform education has not been fulfilled. The hard fact is that the impact of the computer on the teaching and learning process has not yet been significant .(p 1)

Interactive systems that facilitate learning are responsive, adaptive and dynamic with respect to the needs of the learner and the technology for knowledge transfer (Barker, 1990) Only with immediate access can educators move beyond the limiting view of technology as an efficiency and productivity tool--a narrow and limited view of technology. An environment designed to be flexible, offering a wide range of possibilities for cross- discipline accommodation, will provide access to technology that will reach a point where computers become natural tools with which to work. (Dwyer, Ringstaff & Sandholtz, 1990) Using computers and instructional media in this fashion will require students to define problems, to research information, and to select possible solutions based on their findings. Students at all levels will gain confidence in their ability to resolve new problems and to interact with a variety of individuals through the media.

The College of Education at the University of Wyoming has recently developed eight multi-media learning stations for use by faculty, graduate students, undergraduate teacher education students and Unit III (middle/junior high school) students from the Wyoming Center for Teaching and Learning at Laramie (WCTL-L), a laboratory school located in the College. The learning

stations are all equipped basically the same, including a Macintosh IIsi computer with a color monitor, CD ROM, video disk player, VCR, and color TV monitor. Two of learning stations are furnished with additional equipment in order to provide TV/video editing and audio/synthesizer capabilities. All stations are equipped as multi-media learning centers, and all stations support the development of multi-media learning modules.

It is not envisioned that, by this project alone, the undergraduate and graduate teacher education programs will be immediately transformed to fully embrace the technology that is currently available. However, this project will allow exploration of several issues relating to technology in the classroom. Specifically, the multi-media center has the following objectives with regard to the education of teachers:

- Provide a classroom/laboratory setting in which undergraduate teacher education students will be able to observe and interact with laboratory school students engaged in interactive learning utilizing computer enhanced, multimedia learning stations.
- Provide College of Education faculty with the opportunity to develop and offer undergraduate curriculum modules utilizing computer enhanced, multimedia learning stations.
- Provide the capability for staff development efforts focused on the integration of technology into the teaching/learning situation. This facility provides capabilities for integrating mathematics, science, fine arts and technology education.

Methodology

In order to implement this program into the undergraduate teacher education program during the 1992-93 academic year, a pilot study was conducted during the summer of 1992 to attempt to identify teaching and learning issues related to computer enhanced, multimedia instructional platforms. Subjects for this study were seven middle/junior high school students attending a three week course designed to acquaint students with the application of multi-media tools to specific learning outcomes. Although each learning station accommodates two students (in order to foster cooperative learning) students were allowed to work alone or in pairs if they so

desired. The presentations developed by the students involved the use of computer software as well as video and audio editing, image scanning, and digitized video imaging.

Formative evaluation of the project was based on student experiences, motivations and expectations with regard to the learning environment. Student information, including computer experience, motivation and expectations, were assessed by a structured interview prior to the start of the workshop. Preferred learning styles were assessed utilizing the Canfield Learning Styles Inventory (LSI), Form C. Student progress was monitored by journal entries and observations by workshop staff. The culminating experience of the workshop focused on student presentation of their projects.

Results

The seven participants enrolled in the summer workshop included three sixth grade, two eighth grade and two ninth grade students. All had access to a computer at home and school, and one student had prior experience with Hypercard. The students were asked to complete the Learning Style Inventory at the beginning of the workshop. Based on their responses, four students were classified as independent learners, two as social learners, and one indicated a neutral preference. Observation of the interactions between students reinforced the learning style classifications indicated by the LSI.

Three students worked alone (one social and two independent learners) either by choice or due to the dynamics of the group. Four students worked in pairs, and, due at least in part to disparate learning styles, cooperative learning was ineffective. One set cooperative learners consisted of a social/applied (SA) learner paired with an independent/conceptual (IC) learner. This pairing occurred after the workshop was well underway, when the SA learner visited the IC learner's station, became interested in what was going on, and requested a partnership effort. While the two students appeared to get along fairly well, their project was not completed in the allotted time. The social learner in this pairing appeared to be more interested in socializing and the independent learner became very frustrated by having to assume responsibility for project completion.

The other pairing consisted of an independent learner and a learner with neutral preference. These two students were the oldest in the group, and the collaborative effort may have had more to do with boy - girl attraction (initially) than with a desire to work cooperatively. The manual for the Learning Styles Inventory (1992) states that "...the Neutral Preference individual may find it difficult to become entirely and enthusiastically involved in a given educational activity." (p27) This characteristic described one member of this team perfectly. This pair not only failed to complete the project, but had significant difficulty identifying a unifying topic.

Discussion

Much of the push for computer-based, mediated instruction has been based on efficiency, the ability to proceed at one's own pace, and the motivational value of the technology. To date, there is little evidence, either pro or con, as to the value of technology in the teaching-learning situation. The Integrated Learning Center is an attempt to begin to address questions raised about the value of technology in the classroom; how, when, how much, and even if technology belongs in the teaching-learning situation.

The pilot study was not of a sufficient size, nor of sufficient length, to answer questions about the efficacy of computer-based, multi-media learning stations. It did, however, highlight some of the difficulties inherent in cooperative learning when student pairs have different learning styles. The learning centers are now being utilized by sixth through ninth grade students, initially to learn the systems and their capabilities. As the students begin developing their culminating projects for this section of the course, it is important that student learning styles be a consideration as cooperative teams are formed.

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